

WHAT IS CLAIMED IS:

1. An urodynamics system having a function of verifying bidirectional data in real time, in which urination disorder of a bladder is diagnosed in the course of filling the bladder with a liquid and ejecting the liquid from the bladder, the system comprising:

a bladder inserting catheter having three or more lumens and being inserted into the bladder through an urethra to fill the bladder with the liquid and eject the liquid from the bladder, wherein the three or more lumens including at least a liquid injecting lumen, a liquid ejecting lumen and an urethra pressure measuring lumen;

a liquid distributing section for distributing the liquid into at least any one of the liquid injecting lumen and the urethra pressure measuring lumen;

a pumping section having a tube, a pump and a motor, for supplying the liquid to the liquid distributing section;

a data detecting section provided between the bladder inserting catheter and the liquid distributing section, for detecting pressure data measured using the respective lumens of the bladder inserting catheter, wherein the data detecting section having pressure sensors connected to the corresponding lumens; and

a control unit for verifying validity of the pressure data detected by the data detecting section, and controlling the pumping section and the data detecting section in

accordance with a result of the validity verification or an instruction input by a user.

2. An urodynamics system having a function of verifying bidirectional data in real time according to claim 1, wherein the liquid is a physiological salt solution for scrub or disinfection.

3. An urodynamics system having a function of verifying bidirectional data in real time according to claim 1, wherein in the course of filling the bladder with the liquid through the liquid injecting lumen, the data detecting section measures a dynamic pressure value in the liquid injecting lumen using a first pressure sensor connected to the liquid injecting lumen, measures a static pressure value in the bladder using a second pressure sensor connected to the liquid ejecting lumen, and supplies the dynamic pressure value and the static pressure value to the control unit,

wherein in the course of ejecting the liquid filling in the bladder through the liquid ejecting lumen, the data detecting section measures the dynamic pressure value in the liquid ejecting lumen using the second pressure sensor connected to the liquid ejecting lumen, measures the static pressure value in the bladder using the first pressure sensor connected to the liquid injecting lumen, and supplies the dynamic pressure value and the static pressure value to the control unit, and

wherein the control unit compares the dynamic pressure value and the static

pressure value to verify the validity of the measured data.

4. An urodynamics system having a function of verifying bidirectional data in real time according to claim 3, wherein the data detecting section comprises a liquid
5 injecting section for injecting a liquid equal to the liquid for adjustment of zero point when the zero points of the first pressure sensor and the second pressure sensor are not equal to each other.

5. An urodynamics system having a function of verifying bidirectional data in
10 real time according to claim 1, further comprising a rectum inserting catheter of which an end portion is coupled to a sealed balloon and which is inserted into a rectum through the anus for measuring a rectum pressure,

wherein the liquid distributing section further distributes the liquid into the rectum inserting catheter, and

15 wherein the data detecting section is provided between the rectum inserting catheter and the liquid distributing section, and further detects a pressure data measured by the rectum inserting catheter.

6. An urodynamics system having a function of verifying bidirectional data in
20 real time according to claim 5, further comprising an abdominal electromyogram

electrode to be attached to a human body, as a biological signal measuring electrode for detecting influence which a force applied to an abdomen in urination gives to an urination system,

wherein the control unit compares a pressure value corresponding to a voltage
5 value measured using the abdominal electromyogram electrode with the rectum pressure measured using the rectum inserting catheter, and verifies validity of the measured data.

7. An urodynamics system having a function of verifying bidirectional data in real time according to claim 1, further comprising a flow rate adjusting section provided
10 at a front stage of the pumping section, for supplying a small amount of the liquid to the pumping section, in order to measure an urethra pressure using the urethra pressure measuring lumen.

8. An urodynamics system having a function of verifying bidirectional data in
15 real time according to claim 1, further comprising a mono-carrier connected to the bladder inserting catheter, for inserting or pulling out the bladder inserting catheter through the urethra at a constant speed.

9. An urodynamics system having a function of verifying bidirectional data in
20 real time according to claim 1, further comprising a flow rate measuring section for

measuring an amount of residual urine or physiological salt solution ejected from the bladder when the residual urine in the bladder or the physiological salt solution filling in the bladder is ejected through the liquid ejecting lumen.

5 10. An urodynamics system having a function of verifying bidirectional data in real time according to claim 9, further comprising a residual urine detecting section in which a current flowing through a first electrode, the bladder and a second electrode flows,

 wherein the control unit calculates the amount of residual urine in the bladder
10 using a magnitude of the current flowing through the first electrode, the bladder and the second electrode and an impedance value calculated from a potential difference between the first electrode and the second electrode, and compares the amount of residual urine with a flow rate measured by the flow rate measuring section to verify the validity of the measured data.

15 11. A method of verifying in real time bidirectional data in an urodynamice system for diagnosing urination disorder of a bladder in the course of filling the bladder with a liquid and ejecting the liquid from the bladder, the urodynamics system comprising a bladder inserting catheter, a data detecting section and a control unit, the
20 data detecting section having one or more pressure sensors, the method comprising:

a step of filling the bladder with the liquid through a liquid injecting lumen of the bladder inserting catheter inserted into the bladder through an urethra, the bladder inserting catheter having at least the liquid injecting lumen, a liquid ejecting lumen and an urethra pressure measuring lumen;

5 a step in which a first pressure sensor connected to the liquid injecting lumen measures a dynamic pressure value in the liquid injecting lumen and transmits the dynamic pressure value to the control unit, in the course of filling the bladder with the liquid;

a step in which a second pressure sensor connected to the liquid ejecting lumen
10 measures a static pressure value in the bladder and transmits the static pressure value to the control unit, in the course of filling the bladder with the liquid;

a step in which the control unit compares the dynamic pressure value with the static pressure value to verify validity of the measured pressure value; and

a step of displaying a result of the validity verification in a display section.

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12. A method of verifying bidirectional data in real time according to claim 11, further comprising:

a step of ejecting the liquid filling in the bladder through the liquid ejecting lumen;

20 a step in which the first pressure sensor connected to the liquid injecting lumen

measures the static pressure value in the bladder and transmits the static pressure value to the control unit, in the course of ejecting the liquid from the bladder;

a step in which the second pressure sensor connected to the liquid ejecting lumen measures the dynamic pressure value in the liquid ejecting lumen and transmits the dynamic pressure value to the control unit, in the course of ejecting the liquid from the bladder;

a step in which the control unit compares the dynamic pressure value with the static pressure value to verify validity of the measured pressure value; and

a step of displaying a result of the validity verification in a display section.

13. A method of verifying bidirectional data in real time according to claim 11, wherein the urodynamics system further comprises a rectum inserting catheter of which an end portion is coupled to a sealed balloon and which is inserted into a rectum through an anus for measuring a rectum pressure, and an abdominal electromyogram electrode to be attached to a human body, as a biological signal measuring electrode for detecting influence which a force applied to an abdomen in urination gives to an urination system,

the method further comprising:

a step in which a third pressure sensor connected to the rectum inserting catheter inserted through the anus measures the rectum pressure and transmits the

rectum pressure to the control unit;

a step in which the control unit compares a pressure value corresponding to a voltage value measured using the abdominal electromyogram electrode with the rectum pressure to verify validity of the measured data; and

5 a step of displaying a result of the validity verification in a display section.

14. A method of verifying bidirectional data in real time according to claim 11, wherein the urodynamics system further comprises a flow rate measuring section for measuring an amount of residual urine or physiological salt solution ejected from the bladder when the residual urine in the bladder or the physiological salt solution filling in the bladder is ejected through the liquid ejecting lumen, and a residual urine detecting section in which a current flowing through a first electrode, the bladder and a second electrode flows,

the method further comprising:

15 a step in which the control unit calculates the amount of residual urine in the bladder using a magnitude of the current flowing through the first electrode, the bladder and the second electrode and an impedance value calculated from a potential difference between the first electrode and the second electrode;

a step in which the control unit compares the amount of residual urine with a flow rate measured by the flow rate measuring section to verify validity of the measured

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data; and

a step of displaying a result of the validity verification in a display section.

15. A defecation disorder diagnosing apparatus having a function of verifying
5 bidirectional data in real time, in which defecation disorder is diagnosed in the course of
filling a rectum with a liquid and ejecting the liquid from the rectum, the apparatus
comprising:

a rectum inserting catheter having three or more lumens and being inserted into
the rectum through an anus to fill the rectum with the liquid and eject the liquid from
10 the rectum, wherein the three or more lumens including at least a liquid injecting lumen,
a liquid ejecting lumen and an urethra pressure measuring lumen;

a liquid distributing section for distributing the liquid into at least any one of
the liquid injecting lumen and the urethra pressure measuring lumen;

a pumping section having a tube, a pump and a motor, for supplying the liquid
15 to the liquid distributing section;

a data detecting section provided between the rectum inserting catheter and the
liquid distributing section, for detecting pressure data measured using the respective
lumens of the rectum inserting catheter, wherein the data detecting section having
pressure sensors connected to the corresponding lumens; and

20 a control unit for verifying validity of the pressure data detected by the data

detecting section, and controlling the pumping section and the data detecting section in accordance with a result of the validity verification or an instruction input by a user.

16. A defecation disorder diagnosing apparatus having a function of verifying
5 bidirectional data in real time according to claim 15, wherein in the course of filling the rectum with the liquid through the liquid injecting lumen, the data detecting section measures a dynamic pressure value in the liquid injecting lumen using a first pressure sensor connected to the liquid injecting lumen, measures a static pressure value in the rectum using a second pressure sensor connected to the liquid ejecting lumen, and
10 supplies the dynamic pressure value and the static pressure value to the control unit,

wherein in the course of ejecting the liquid filling in the rectum through the liquid ejecting lumen, the data detecting section measures the dynamic pressure value in the liquid ejecting lumen using the second pressure sensor connected to the liquid ejecting lumen, measures the static pressure value in the rectum using the first pressure
15 sensor connected to the liquid injecting lumen, and supplies the dynamic pressure value and the static pressure value to the control unit, and

wherein the control unit compares the dynamic pressure value with the static pressure value to verify validity of the measured data.

20 17. A defecation disorder diagnosing apparatus having a function of verifying

bidirectional data in real time according to claim 16, wherein the data detecting section comprises a liquid injecting section for injecting a liquid equal to the liquid for adjustment of zero point when the zero points of the first pressure sensor and the second pressure sensor are not equal to each other.

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18. A defecation disorder diagnosing apparatus having a function of verifying bidirectional data in real time according to claim 15, further comprising an abdominal electromyogram electrode to be attached to a human body, as a biological signal measuring electrode for detecting influence which a force applied to an abdomen in defecation gives to an defecatio system,

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wherein the control unit compares a pressure value corresponding to a voltage value measured using the abdominal electromyogram electrode with any one of the dynamic pressure value and the static pressure value measured using the rectum inserting catheter, to verify validity of the measured data.

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